AIR CONCENTRATIONS OF VOLATILE ORGANIC COMPOUNDS ALONG THE TRAILS

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As part of the development of the Meadowlands, hiking and water trails have been included for the recreational use of visitors to the area and nearby residents. These trails wind through the wetlands of the area and may be on or near areas that were once used for landfills and are adjacent to areas in which construction is occurring and that have industrial activities. In addition, the Meadowlands is near the NJ Turnpike, a major roadway with large mobile source emissions. Thus, emissions of a variety of volatile organic compounds are expected to occur in the area that could lead to exposure to individual on the trails. This exposure could change while as additional development of the Meadowlands occur or during different seasons and meteorological conditions. The air concentrations for a suite of aromatic and chlorinated hydrocarbons were determined during December 2004 – January 2005; August – September 2005 and September – November 2006. The air samples were collected while walking along the trails both during the morning and afternoon for approximately two hours using a personal air sampling pump and a mixed bed adsorbent. The samples were analyzed by thermal desorption coupled with gas chromatography/mass spectrometry. Correlation coefficients, scatter plots evaluate and the relationship between the concentrations and wind speeds were examined to identify which compounds had similar sources. The nearby roadways appear to be a major source for the aromatic compounds to the area. The concentrations of the aromatic compounds were higher in the summer than winter, reflecting the difference in combustion efficiencies of the two seasons. Chlorinated compounds were detectable in a subset of the samples and showed little correlation between individual compounds. The concentrations of the chlorinated compounds were higher in the summer than winter. These associations are indicative of unique sources for each of the compounds that are a function of evaporative processes. Overall, the concentrations of most of the VOCs measured in the Meadowlands are similar to the concentrations measured in urban centers in New Jersey. This suggests that exposures to VOCs while hiking within the Meadowlands would be similar to what most residents would receive near their homes.